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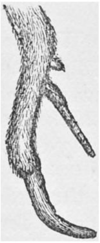
had not been able to find tubers on the vulgaris, and the published description of that species made no mention of any.

There is growing in the Meehan nurseries, near Germantown, Pa., a specimen of *O. Rafinesquii* from New Jersey, which is identical with one from Illinois, also a specimen of *O. vulgaris*, from Harper's Ferry, Virginia, which is identical with the one collected near Haddonfield, N. J. These two species are somewhat closely allied; yet the form and position of the leaves are manifestly different, and being early deciduous is possibly the cause of their being so long confounded. Certain it is, if the two species as described are distinct, we have both of them in New Jersey.

Supernumerary Anterior Extremity in a Domestic Cow.—Dr. **Allen** exhibited a drawing of a malformation somewhat similar to that recorded in the Proceedings of July 25.



In this instance, however, the digits were reduced to two. These were of unequal size and one only was terminal. The remaining digit was appended to the side of the metacarpus, but was not articulated with it. It was indeed a dwarfed digit held in position to the metacarpus by fibrous tissue and integument. When at rest it lay nearly parallel to the main digit. Each digit possessed a well-developed hoof-like covering, the larger mass being curved and compressed from side to side, while the smaller one was styliform.

Above the smaller digit was a small conical appendage, which may be considered a localized hypertrophy in the normal position of the "cleet."

August 22.

The President, Dr. **Ruschenberger**, in the chair.

Twenty members present.

August 29.

The President, Dr. **Ruschenberger**, in the chair.

Twelve members present.

A paper entitled "Note on the Discovery of Representatives of Two Orders of Fossils new to the Cretaceous Formation of North America," by Wm. M. Gabb, was presented for publication.

On the Coal and Iron Resources of Alabama.—Mr. **William Gesner** remarked that a number of applied and interesting scientific facts had developed themselves in connection with the construction of geological sections in miniature of the Warrior and Cahaba Coal Measures in Alabama for exhibition at the Centennial. The frequent inquiry for information concerning them had induced him to believe that a description of these measures would prove interesting to the Academy of Natural Sciences.

The three coal fields of Alabama, comprising an area exceeding seven thousand square miles, and separated by narrow silurian valleys, are just now being brought into prominent notice by the superior character of the coals and coke they afford, and the economy incidental to the manufacture of iron by their means.

The valleys which separate these fields being stored with inexhaustible supplies of the best grades of hematite and brown ores, even to that variety best adapted to the manufacture of ferro-manganese, it seems surprising that both of these resources should have been allowed to lie dormant for such a length of time, while others of less extent, richness, and economy of working have been given their fullest development.

It is now ascertained that the coal measures of the Warrior and Cahaba coal fields consist severally of 172 and 173 strata, embracing respectively forty-six and fifty-one coal-seams of all dimensions, from one inch up to six feet six inches in thickness, constituting a grand aggregate of one hundred and eighty-eight feet of bituminous coal.

In the Warrior field there are many localities where the beds of coal lie horizontally, while in the Cahaba they are more frequently inclined; but all of those being worked in either are reached by slope or tunnel.

Two beds of black band characterize the Warrior measures, one of them showing a richness of 43 per cent. metallic iron; clay iron-stone is abundant, and is found in all of the coal fields in Alabama. In one instance it constitutes the roof of a twenty-eight-inch bed of coal in the Warrior measures.

The fossil fauna and flora of these beds are found to be similar. Immediately beneath the mountain limestone of the carboniferous formation in the upper silurian, a bed of fossiliferous hematite occurs as one of its members. It extends in a northeastern direction, a distance exceeding 120 miles, and into the State of Tennessee, where it may be seen outcropping, interstratified with ferruginous limestone seven feet thick, under Mitchell's Point, Walden's Ridge.

In Jefferson County, Alabama, its thickness is found to be twenty-eight feet, gradually becoming thinner toward its northeastern prolongation. Wherever it outcrops on the top, from the sides, and in the valleys of Red Mountain, it is noted for affording the most fertile soils.

It is conceded by all who see and examine this immense bed of ore, that it is to become the great base from whence in the future our principal supplies of iron will be produced.

In the neighborhood of from two to three miles east and west of this ore bed lie the coal fields before mentioned. For its entire extent through the State, and immediately under it, lie the limestones of the silurian formation, among which are many of the purest and those best adapted for fluxing iron from its ores.

Geologically, in descending order, next occur the immense beds of brown ore, comprising the varieties manganiferous and fibrous limonite, mamillary and crystallized hematite, belonging to Talladega, Coosa, Cahaba, Roop's and Murphy's valleys, from which heretofore nearly all of the Alabama iron has been produced—charcoal being used for fuel.

At the present time, by a practical application of all of these advantages, great progress has been made by the Eureka Company, under the able superintendence of Mr. James Thomas.

After remodelling the plant of the former Red Mountain Iron and Coal Company at Oxmoor Station, on the South and North Alabama R. R., he has put in hot blast one furnace, on coke produced on the spot by ovens, with attached combustion chambers of his own devising. The ore charges are made to consist of the mixture—three-quarters fossiliferous hematite and one-quarter brown ore, which is yielding from the furnace 56 per cent. good pig metal, costing under twelve dollars per ton in its manufacture. In view of these facts it becomes evident that Alabama will soon attain pre-eminence in the production of iron; and, as steel supersedes its use for railroad and all other mechanical appliances (our next great stride in the march of civilization), she must become most populous and prosperous, for her climate is equable and her soils rank among the most fertile.

Dr. S. H. Linn, of St. Petersburg, Prof. Paul Groth, of Strasburg, and Dr. James Hector, of New Zealand, were elected correspondents.

The following papers were ordered to be published:—